

## ABSTRACT OF THE DISCLOSURE

A communication system capable of performing efficient Wavelength Division Multiplexing (WDM) transmission by flexibly handling connection services. A Bit Error Rate (BER) measurement unit measures BER of individual optical signals with different wavelengths. A BER transmission unit transmits BER information to the sending end. A wavelength assignment unit assigns each wavelength to at least one of high Quality-of-Service (QoS) communication and low QoS communication. A wavelength-assignment exchanging unit identifies low quality wavelengths with high BERs being used for the high QoS communication, and unless the low quality wavelengths being used for the high QoS communication outnumber the high quality wavelengths with low BERs being used for the low QoS communication, it exchanges the low quality wavelengths and an equal number of the high quality wavelengths. An optical signal transmission unit multiplexes the wavelengths to transmit the optical signals.